

Atty. Dkt. No. 032026-0771

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Mark Gregory Friesen, et al.
Title: SPIN READOUT AND
INITIALIZATION IN
SEMICONDUCTOR QUANTUM
DOTS
Appl. No.: 10/787,075
Filing Date: February 25, 2004
Art Unit: 2811

<p>CERTIFICATE OF MAILING I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as First Class Mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on the date below.</p> <p><u>Harry C. Engstrom</u> (Printed Name)</p> <p><u>[Signature]</u> (Signature)</p> <p><u>July 8, 2004</u> (Date of Deposit)</p>

INFORMATION DISCLOSURE STATEMENT
UNDER 37 CFR §1.56

Mail Stop MISSING PARTS
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Submitted herewith on Form PTO-1449 is a listing of documents known to Applicants in order to comply with Applicants' duty of disclosure pursuant to 37 CFR §1.56. A copy of each listed document, except as noted below, is being submitted to comply with the provisions of 37 CFR §1.97 and §1.98.

The USPTO has waived the requirement under 37 CFR 1.98(a)(2)(i) to submit copies of U.S. patents and U.S. patent application publications when citing and submitting an Information Disclosure Statements in a patent application filed after June 30, 2003 and in an international application that has entered the national stage under 37 USC §371 after June 30, 2003. Accordingly, copies of these types of documents are not being supplied in connection with this application. Reference is being made to Pre-OG Notice from Office of Patent Legal Administration dated July 25, 2003, *Information Disclosure Statements May Be Filed Without*

Copies of U.S. Patents and Published Applications in Patent Applications filed after June 30, 2003.

The submission of any document herewith, which is not a statutory bar, is not intended as an admission that such document constitutes prior art against the claims of the present application or that such document is considered material to patentability as defined in 37 CFR §1.56(b). Applicants do not waive any rights to take any action which would be appropriate to antedate or otherwise remove as a competent reference any document which is determined to be a *prima facie* art reference against the claims of the present application.

TIMING OF THE DISCLOSURE

The listed documents are being submitted in compliance with 37 CFR §1.97(b), before the mailing date of the first Office Action on the merits.

RELEVANCE OF EACH DOCUMENT

All of the documents are in English.

Applicants respectfully request that any listed document be considered by the Examiner and be made of record in the present application and that an initialed copy of Form PTO-1449 be returned in accordance with MPEP §609.

The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application under 37 CFR §§ 1.16-1.17, or credit any overpayment, to Deposit Account No. 50-2350. Should no proper payment be enclosed herewith, as by a check being in the wrong amount, unsigned, post-dated, otherwise improper or informal or even

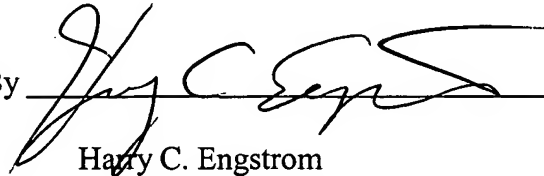
entirely missing, the Commissioner is authorized to charge the unpaid amount to Deposit
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Respectfully submitted,

Dated: July 8, 2004

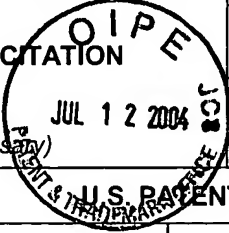
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By

A handwritten signature in black ink, appearing to read "Harry C. Engstrom", written over a horizontal line.

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Form PTO-1449 (MODIFIED)		U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE		ATTY. DOCKET NO. 032026-0771		SERIAL NO. 10/787,075	
INFORMATION DISCLOSURE CITATION Submitted: July 8, 2004 <i>(Use several sheets if necessary)</i>				APPLICANT Mark Gregory Friesen, et al.			
				FILING DATE 02/25/2004		GROUP ART UNIT 2811	



U.S. PATENT DOCUMENTS							
EXAMINER INITIAL	REF	DOCUMENT NUMBER	DATE	NAME	CLASS	SUB-CLASS	FILING DATE IF APPROPRIATE
		5,530,263	6/96	DiVencenzo			
		5,671,437	9/97	Taira			
		6,369,404	4/9/02	Kane			
		6,472,681	10/29/02	Kane			
		6,597,010	7/22/03	Eriksson, et al.			

FOREIGN PATENT DOCUMENTS								
	REF	DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUB-CLASS	TRANSLATION	
							YES	NO

OTHER DOCUMENTS <i>(Including Author, Title, Date, Pertinent Pages, Etc.)</i>		
		I.H. Chan, et al., "Few-Electron Quantum Dots for Quantum Computing," preprint http://arxiv.org/cond-mat/0309205 .
		Daniel Loss, et al., "Quantum Computation with Quantum Dots," Physical Review A, Vol. 57, No. 1, January 1998, pp. 120-126.
		B.E. Kane, "A Silicon-Based Nuclear Spin Quantum Computer," Nature, vol. 393, May 14, 1998, pp. 133-137.
		Rutger Vrijen, et al, "Electron-Spin-Resonance Transistors for Quantum Computing in Silicon-Germanium Heterostructures," Physical Review A, vol. 62, 2000, pp. 12306-1--012306-10.
		M. Ciorga, et al., "Addition Spectrum of a Lateral Dot from Coulomb and Spin-Blockade Spectroscopy," Physical Review B, Vol. 61, No. 24, 15 June 2000, pp. 315-318.
		Patrik Recher, et al., "Quantum Dot as Spin Filter and Spin Memory," Physical Review Letters, Vol. 85, No. 9, 28 August 2000, pp. 1962-1965.

		Michel H. Devoret, et al., "Amplifying Quantum Signals with the Single-Electron Transistor," <u>Nature</u> , Vol. 406, 31 August 2000, pp. 1039-1046.
		Friesen, M., et al., "Modeling Interactions of Si-Ge Qubits," American Physical Society, Jan. 2001; available at http://www.aps.org/meet/MAR01/baps/abs/S3640004.html .
		Jeremy Levy, "Quantum-Information Processing with Ferroelectrically Coupled Quantum Dots," Physical Review A, vol. 64, 2001, pp. 052306-1--052306-7.
		Hans-Andreas Engel, et al., "Detection of Single Spin Decoherence in a Quantum Dot via Charge Currents," Physical Review Letters, Vol. 86, No. 20, 14 May 2001, pp. 4648-4651.
		L.M.K. Vandersypen, et al., "Quantum Computing with Electron Spins in Quantum Dots," arXiv:quant-ph/0207059 v1, 10 Jul 2002, pp. 1-10.
		Mark Friesen, et al., "Practical Design and Simulation of Silicon-Based Quantum-Dot Qubits," Physical Review B 67, 121301(4) (2003), pp. 121301-1 – 121301-4.
		J.M. Elzerman, et al., "Few-Electron Quantum Dot Circuit with Integrated Charge Read Out," Physical Review B 67, 161308(R)(2003), pp. 161308-1 – 161308-4.
		Wei Lu, et al., "Real-Time Detection of Electron Tunneling in a Quantum Dot," <u>Nature</u> , 423, 422 (2003).
		R. Hanson, et al., "Zeeman Energy and Spin Relaxation in a One-Electron Quantum Dot," Physical Review Letters, Vol. 91, No. 19, 7 November 2003, pp. 196802-1 – 196802-4.
		Mark Friesen, et al., "Spin Readout and Initialization in a Semiconductor Quantum Dot," Physical Review Letters, Vol. 92, No. 3, Jan. 23, 2004, pp. 037901-1-037901-4.
EXAMINER		DATE CONSIDERED
<p>* EXAMINER: Initial if citation considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include any copy of this form with next communication to applicant.</p>		